Mediawatch

When a butterfly flaps its wings…

Bernard Dixon

On 20 May, most UK newspapers carried large colour photographs of the monarch butterfly. Some were even bigger than the accompanying reports, with headlines typified by the *Daily Mail*'s "GM pollen that can mean a cloud of death for butterflies." The implication was that genetically modified plants in general threaten butterflies in general — even the environment in general.

The articles stemmed from the appearance in *Nature* (1999, **399:**214) of work by John Losey and colleagues at Cornell University, USA. They had shown that monarch larvae, placed on milkweed leaves dusted with pollen from *Bt* corn (corn transformed with DNA from the bacterium *Bacillus thuringiensis*), ate less, grew more slowly and suffered higher mortality than those placed on leaves dusted with pollen from untransformed corn. Losey *et al.* said these effects were probably attributable to *Bt* toxin in the pollen, and argued that this could threaten monarch butterflies within range of pollen from the US corn belt.

Although these concerns seem justified, media coverage of the story illustrated the relentless escalation of hysteria that has characterized reporting of GM foods in the UK over the past year. First, the work itself was significant yet incomplete. Crucially, the authors did not compare the effect of GM pollen with *Bt* toxin itself or with other widely used pesticides that transgenic plants are intended to replace.

Then, the importance of the story was highlighted by a press release from *Nature*. Third, its photogenic quality and timing — in the midst of a nationwide frenzy over GM foods — ensured a prime place on the media agenda. It dominated the front page of the *Independent*, relegating the Kosovo conflict to a smaller item at the bottom of the page.

Such antics will perplex many scientists outside the UK (and many inside). Yet there are wider messages here. One is the danger that national hysteria can not only jeopardise an entire industry in one country but create tidal waves elsewhere and indeed threaten international trade.

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It is tempting to blame the media alone for what has happened; there is much incriminating evidence. Yet the second lesson is that others have played significant roles, sometimes unwittingly. The UK furore over GM foods was ignited not by a journalist but by a scientist, Arpad Pusztai of the Rowett Research Institute, last August. It was then supercharged by an international group of scientists in February this year (see *Mediawatch*, *Curr Biol* 1999, **9:**R154).

Consider, too, the British Medical Association's recent report on *The Impact of Genetic Modification on Agriculture, Food and Health* and the ensuing media coverage. "Doctors on alert for GM diseases" (*The Times*) and "Doctors sound alarm on GM food" (*The Independent*) were two of the more sober headlines which greeted its publication — and no doubt raised public anxieties.

But what did the BMA report actually say? With its wealth of experience regarding the misuse of antimicrobial drugs in clinical practice, the BMA might have been expected to offer some incisive thinking on antibiotic resistance genes as markers in recombinant DNA work. Instead, in less than 200 words on the topic, it simply cited conclusions from previous reports and committees.

On allergenicity, the report stated "transgenic products may adversely affect people suffering from allergies. Soyabeans containing genetic material from Brazil nuts cause reactions in individuals allergic to nuts." This was followed by the ambiguous, parenthetical statement: "animal experiments suggested that allergenicity would not be a problem." Paraphrased through the media, these remarks conjured up the spectre of serious allergies if GM foods are widely consumed. Even the *Lancet*'s report referred to "evidence showing that some GM foods cause unexpected allergies in people."

In fact, the single reference that the BMA used to back its claims was to a paper by Julie Nordlee and co-workers (*N Engl J Med* 1996, **334:**688) showing that an allergen from a food already known to be allergenic could be transferred into another food by genetic engineering. They introduced the 2S albumin gene from Brazil nuts into soyabeans, and found that serum IgE from eight of nine individuals allergic to Brazil nuts bound to proteins of similar molecular weight extracted from the beans. Three of four of the subjects showed positive skin prick reactions.

In other words, a screening test on a well-recognized allergen, carried out specifically to exclude hazards of this sort, has been transformed in the public mind into the threat of unforeseen allergens lurking in our food. Neither the BMA report, nor any of the reports on the report, pointed out that one of the most valuable potential applications of genetic modification to food is to remove possible allergens by deleting the appropriate genes.

There is a telling parallel between media coverage of the monarch butterfly and of the potential risks of allergens in GM food. In both cases, an uncritical approach has transformed a genuine concern into a much greater, more imminent, more disquieting danger. Are the media really wholly to blame?

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